

Health News

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Biotech Start-up Introduces First Product

New laboratory device to be manufactured in Morgantown

MORGANTOWN, W.Va. - A company founded in 2002 by West Virginia University researchers and created to commercialize new scientific technology will launch its first product line today. The Protea Explorer System, a \$30,000 device developed at Protea Biosciences in Morgantown, allows scientists to complete a week's worth of work in three hours. It is expected to be in heavy demand among the 12,000 pharmaceutical, biotech and academic laboratories around the world where protein research is conducted.

"Protein analysis is a complex process that requires several difficult steps - including sample preparation, gel electroelution, enzymatic digestion, and mass spectrometry," says Steven Turner, CEO of Protea. "This device will integrate the process for the first time, and provide results in a few hours."

In addition to the vast increase in speed, the enclosed system protects samples from contamination and allows better results from small quantities of biological materials.

"One of the great challenges in medical research is to identify proteins that predict early onset of disease," said Daniel Flynn, Ph.D., associate director for basic research at WVU's Mary Babb Randolph Cancer Center. "Diseases that are caught early have a very high cure rate, or at least offer physicians an opportunity to control or manage the disease. This system invented by Protea Biosciences offers scientists an opportunity to identify rare or weakly expressed proteins that may have important diagnostic value for a variety of diseases."

Dr. Flynn and Dr. Aaron Timperman of the WVU Department of Chemistry are the company's scientific advisors.

The product will be introduced to the scientific community in early April. Turner expects many researchers will be interested in the new technology.

The Protea Explorer system allows researchers to insert blood or tissue samples into a tray. The device can be programmed to carry out a series of steps that would otherwise take place in separate stations around the lab. Once the sample has been processed, it is analyzed in a mass spectrometer.

The new devices will be manufactured at Protea's facilities near the Morgantown airport. "We have 10 employees in Morgantown, and I expect that to double in the next six months," Turner said.

"This is exactly the type of economic development that we hoped for when Protea was formed in 2002," said Robert M. D'Alessandri, M.D., vice president for health sciences at WVU. "It not only moves research forward, but creates jobs and opportunities for West Virginians who want to put their scientific skills to work in our community."

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Protea announces development of a new protein sample preparation system

MORGANTOWN, W. Va., March 29, 2006 – Protea Biosciences, Inc. today announced it has developed a new protein sample preparation instrument system that integrates, into a single in-line system, the various steps of protein sample preparation, from a single gel-spot to the mass spectrometer. The entire processing time has been reduced to a few hours.

"Years of Research have culminated in this new instrument platform, that, for the first time, offers integration of both the biological aspects of sample preparation, such as gel electroelution and enzymatic digest, with the chemical, including sample fractionation, and direct transfer into the mass spectrometer. This system will be a great tool for improving the productivity of Protein Research Laboratories everywhere," stated Steve Turner, President.

Known as the Protea Explorer, the instrument employs an enclosed system design, permitting a large menu of solution-based sample preparation applications, inherently reducing the problems of sample transfer losses and contamination due to handling. User-friendly software provides both a menu of standard control programs and the flexibility to develop custom applications.

The system includes many innovative components, including components that remove protein samples from gels then separates proteins by molecular weight. Downstream, there are components that allow you to simultaneously electrospray and collect the same protein fractions for future use.

"From a Biologist's perspective, this system is just what we have been waiting for. Protea has created a platform that allows researchers the flexibility to utilize

virtually all biological samples, and to have reproducible information in the shortest time possible, with the least amount of manipulations.", Mr. Turner added .

Protea's integrated protein sample preparation system will be made available to researchers in early April.

Protea Biosciences, Inc. (www.proteabio.com) develops new technology for improving the processes of protein Biomarker Discovery, specializing in innovative products for improved protein sample processing and analysis.

BACKGROUNDS

ON PROTEOMICS

With the completion of the human genome project, medical research's attention is shifting to the products of our genes, called "proteins" – the building blocks for all cellular functions – as sources of discoveries relevant to the development of new treatments for human disease.

Proteins are the "goods and services" of cells. All biological functions undertaken by cells are initiated and carried out by proteins. Proteins are composed of varying sequences of amino acids - the building blocks of protein. The information to synthesize proteins is encoded in a cell's DNA. Depending upon the type of cell, about 10% of a cell's mass is protein.

Protein Discovery holds the promise to generate unprecedented opportunities for new Healthcare products and services. The estimated 37,000 genes in the human genome may spawn anywhere from 300,000 to one million proteins. Given that most drugs either act at the protein level or are themselves proteins, the identification of the next generation of therapeutics will depend, to a large extent, on the discovery of protein targets that are in disease pathways.

However, current technology is not adequate to drive the discovery of novel protein targets. Currently, only the top 20% (the most abundant) of proteins present in cells or serum can be identified. The remaining 80% ("lower-abundance" proteins) go undetected. Discovering these new proteins is of great interest to Pharmaceutical Development, as these lower-abundance proteins are critical to cell function and disease processes.

Patterns of protein production change in our bodies, depending on factors such as the stage of our physical development and state of health. Linking expression of specific

proteins to changes associated with diseased conditions, is a promising way to identify clinically-relevant disease targets for drug development and treatment selection.

The biological targets of most Pharmaceuticals are proteins. It is estimated that the pool of protein targets must grow an order of magnitude, to provide the required biological targets to support future drug development. Despite huge investments in new technology, the rate at which new drugs reach the market has decreased markedly over the past 15 years. It is now far short of what is needed to sustain the sector. Consider that the top 100 selling drugs target a common pool of ~25 protein targets (this, out of the estimated 500,000 proteins that exist in cells). Clearly, Pharmaceutical science needs to broaden its knowledge of human biology. For this reason, there is a long term, sustainable market for novel, disease-specific protein targets, or "biomarkers".

Thus, to support the development of new treatments for disease, there is a need for improved technology, to identify proteins in biological samples, as this is the only way to link and confirm the specificity and prevalence of a specific protein to a specific disease stage. This is the significance of Protea's announcement of its development of the Protea Explorer System.

ON PROTEA

Protea Biosciences, Inc, is located in Morgantown, West Virginia, and was founded in 2002, to advance and commercialize new technology that facilitates the discovery of new proteins found in human biological samples (including blood and tissue samples). The company develops its technology in collaboration with its scientific co-founders, and has a close working relationship with West Virginia University, where its scientific co-founders are faculty.

Using proprietary technology, Protea has created a revolutionary Instrument system that enables the rapid and seamless analysis of biological samples. This provides many benefits, including greater speed, reduced sample loss and contamination, facilitating the discovery of novel, disease-specific proteins for use in Pharmaceutical development.

The company is located near the West Virginia University Health Sciences Center (WVUHSC). The Center has undergone a major expansion over the past ten years, including the construction of a new hospital, clinical center, the Mary Babb Randolph Cancer Center, and the Blanchette Rockefeller Neurosciences Institute. Adjacent to the Center is the newly-constructed national laboratory of the National Institute of Occupational Safety and Health (NIOSH).

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